

TROPICAL DEPRESSION 12W

BEST TRACK TC-12W

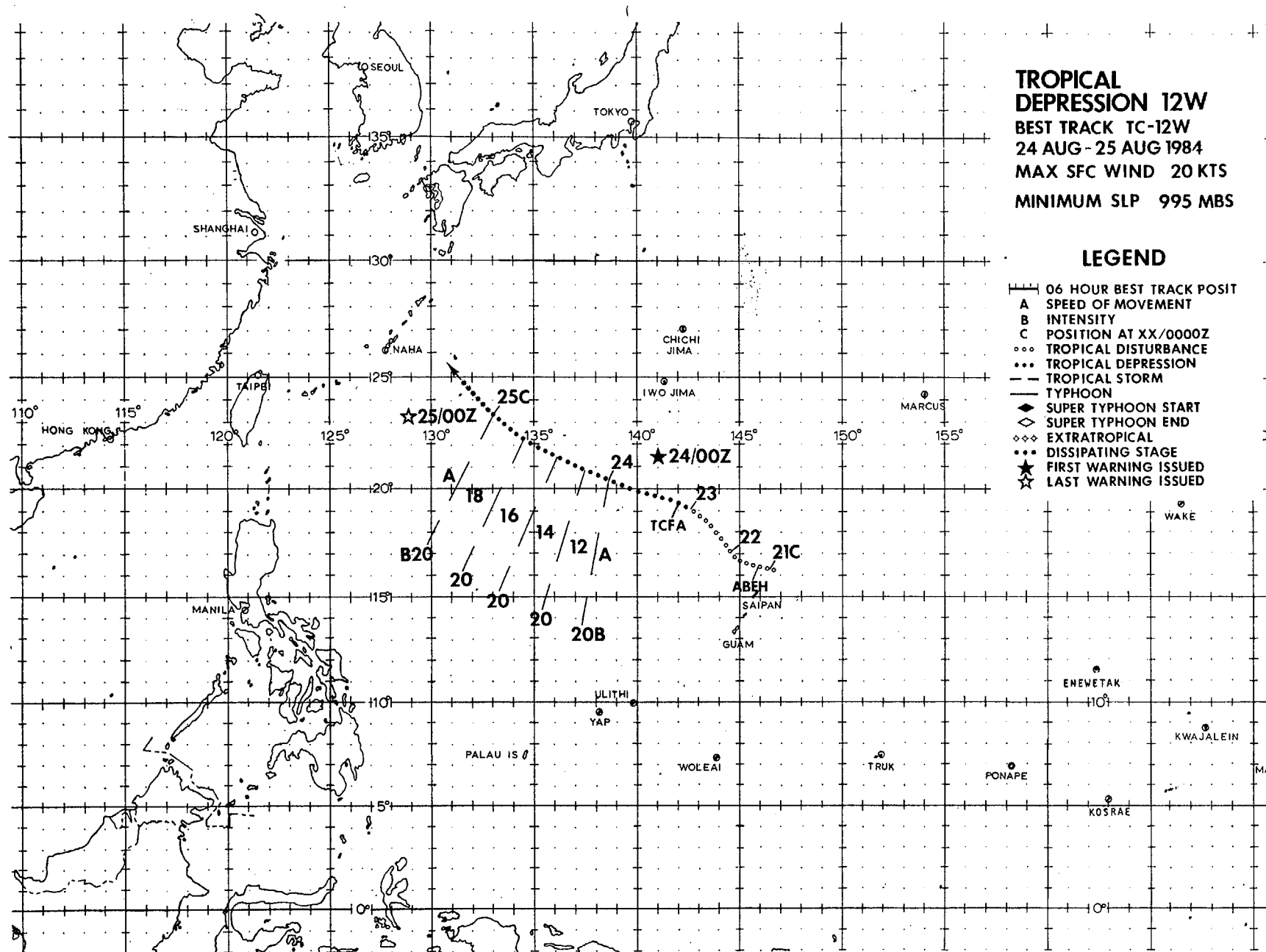
24 AUG - 25 AUG 1984

MAX SFC WIND 20 KTS

MINIMUM SLP 995 MBS

LEGEND

- 06 HOUR BEST TRACK POSIT
- A SPEED OF MOVEMENT
- B INTENSITY
- C POSITION AT XX/0000Z
- ... TROPICAL DISTURBANCE
- ... TROPICAL DEPRESSION
- TROPICAL STORM
- TYPHOON
- ◆ SUPER TYPHOON START
- ◇ SUPER TYPHOON END
- ◇◇ EXTRATROPICAL
- ... DISSIPATING STAGE
- ★ FIRST WARNING ISSUED
- ☆ LAST WARNING ISSUED



TROPICAL DEPRESSION (12W)

Tropical Depression 12W developed in the eastern periphery of the monsoon trough, a favorable position for development, but had a very brief existence. Although this system was located in an area of highly convergent low-level flow, the upper-level support, while initially favorable for development was unable to maintain itself and contributed to the depression's dissipation. The combination of a weak low-level circulation and ill-defined mid and upper-level features made satellite fixing difficult, resulting in a wide disparity between fixes. Aircraft reconnaissance also experienced difficulty in fixing this weak system.

The southwest monsoon was slow to re-develop in the wake of Typhoon Holly. Late on 20 August, with a broad trough extending across the northern Philippine Sea, an area of convection began to develop at the eastern end of the trough just to the north of Guam. Synoptic data at 210000Z indicated that a weak 1011 mb closed circulation had formed approximately 200 nm (370 km) north-northeast of Guam. These developments prompted a discussion of the disturbance in the 210600Z Significant Tropical Weather Advisory (ABEH PGTW). The disturbance tracked generally to the northwest during the next two days, and slowly consolidated.

Satellite imagery at 230000Z showed that the disturbance was separating from the trough. Dvorak satellite intensity analysis estimated that surface winds of 25 kt (13 m/s) were now associated with the system. The first aircraft reconnaissance mission was already underway, but could only find a broad weak circulation. No winds greater than 20 kt (10 m/s) were observed. During this time, a weak, upper-level anticyclone developed over the convection. Its development was aided by a TUTT cell located approximately 6 degrees to the west which provided good divergence aloft. These factors contributed to the issuance of a TCFA at 230500Z.

During the following 18 hours the disturbance showed little change. An aircraft reconnaissance mission the next morning fixed a broad wind and pressure center, with an MSLP of 999 mb. Once again no winds greater than 20 kt (10 m/s) were observed within 250 nm (463 km) of the center. Dvorak satellite intensity estimates now indicated that maximum sustained winds of 30 kt (15 m/s) were present and forecasted 35 kt (18 m/s) winds in 24 hours. Synoptic data revealed that 30 kt (15 m/s) winds were indeed present, but they were located approximately 250 nm (463 km) northeast of the disturbance's center, and were associated with the tight pressure gradient between the subtropical ridge located north of Marcus Island (Minami Tori-Shima (WMO 47991)) and the disturbance. However, upper-level support remained favorable for some intensification which meant that the disturbance would pose a threat within 36 hours to the military and civilian populations on the Ryukyu Islands. Accordingly, the first warning on Tropical Depression 12W was issued at 240000Z.

The favorable upper-level support proved to be short-lived. Visual satellite imagery at first light the next morning (Figure 3-12-1) revealed an exposed low-level circulation with the associated convective activity displaced several hundred miles to the north. Upper-level synoptic data indicated the TUTT cell had moved northwest to near Taiwan, and the convection had sheared to the north, remaining in the divergent region east of the TUTT cell. There was no longer any evidence of an upper-level anticyclone over the depression. The upper-level flow pattern over Tropical Depression 12W was now dominated by 30 to 50 kt (15 to 26 m/s) easterly winds from a large anticyclone which had been present near Japan for several days. This flow was sufficient to prevent the redevelopment of any significant convection near the low-level circulation center. With further development now

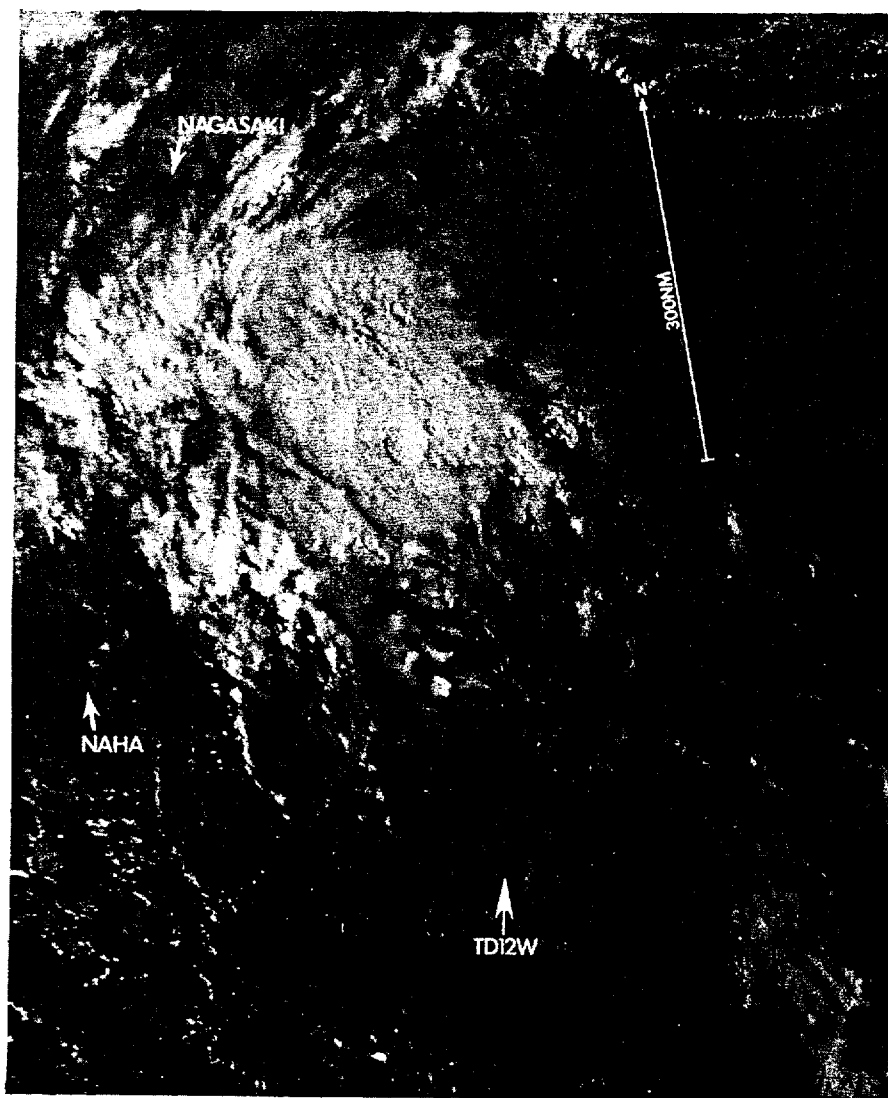


Figure 3-12-1. Exposed low-level circulation of Tropical Depression 12W. The convection which was colocated with the low-level circulation 24 hours earlier is now displaced to the north (242219Z August NOAA visual imagery).

unlikely, the final warning was issued at 0000Z on the 25th.

There were a total of four aircraft reconnaissance missions flown into this system, but only two could fix a center, and both of these had large meteorological and navigational errors. The maximum surface or 1500 ft (457 m) winds found within 200 nm (320 km) of the center were 20 kt (10 m/s). The minimum sea-level pressure found by aircraft was 995 mb at 240708Z which could support 35 kt (18 m/s) winds according to

Atkinson and Holliday (1977). However, no such winds were observed with Tropical Depression 12W.

The exposed low-level circulation, completely void of convection, was tracked northwest after the final warning was issued with 15 to 20 kt (8 to 10 m/s) winds and pressures near 1000 mb being reported. This circulation crossed the Ryukyu Islands near Okinawa before merging with a weak mid-latitude front in the northern East China Sea late on 26 August.